Australian Government
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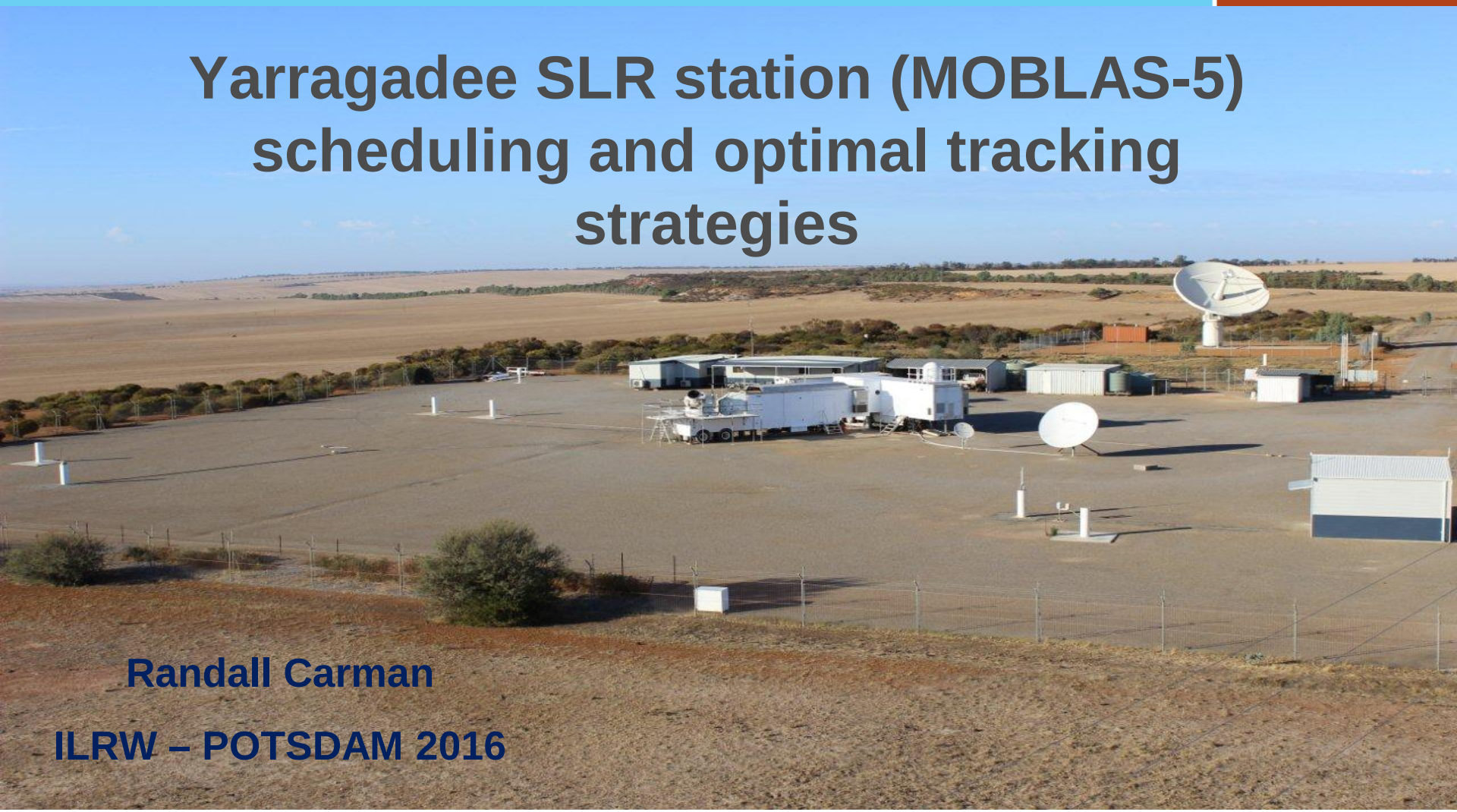
# Yarragadee SLR station (MOBLAS-5) scheduling and optimal tracking strategies



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**ILRW – POTSDAM 2016**

# Scheduling Issues

- Many more satellites to track – with a great increase in demand from GNSS targets - and only one SLR aperture.
- Trackers naturally want to obtain the most data – this traditionally means the most normal points.
- This is often not compatible with demands of “good” GNSS SLR coverage.
- Many of the harder GNSS and especially RNSS satellites can take a longer time to acquire and hence add pressure to operators trying to maximize their data yield.
- Weather of course determines which targets are most suitable for each time period.
- The more targets, the more challenging – good and bad.

# Scheduling at Yarragadee

- We use ILRS / NERC priority lists as a guideline.
- Use horizon to horizon coverage as the goal but pass centred around PCA as the “rule”. We use interleaving to achieve this.
- Select GNSS targets where 3x3x3 NPs can be achieved when there is a choice.
- Interleave lageos and LEOs with GNSS if needed to achieve desired GNSS coverage. ( Lageos / GNSS interleaving can be done without any loss of NPs ).
- Both receive chain (amp and non-amp) modes can be easily accommodated in the same tracking scenario due to pre-processing routines ( unlike standard MOBLAS / NASA systems).
- Continually encourage operators to “lose” a few HEO NPs in the quest for better GNSS coverage.
- We rarely schedule the “quiet” Glonass (<Glonass122).

# Scheduling at Yarragadee

- “Gold medals” awarded in several categories each month for operators.
- Categories (on a per shift average basis) include :

  Most NPs

  Most Campaign Satellite NPs

  Most Daylight HEO NPs

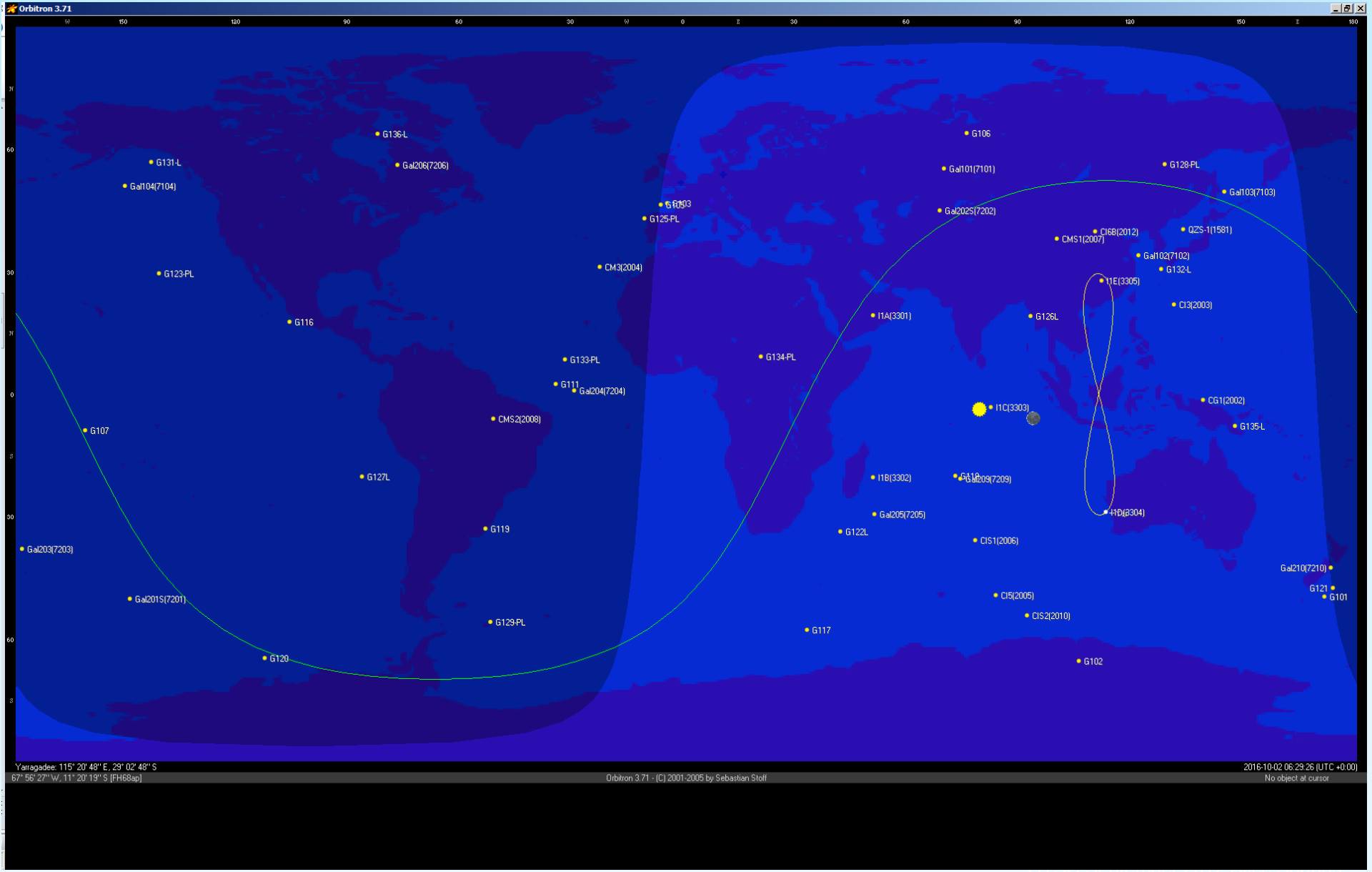
  Most IRNSS NPs

  These are easy to automatically tally and award but subject to some amount of gaming.

- It is not easy to calculate and reward individuals for “good horizon to horizon coverage”.

# GNSS Satellites to track in 1992

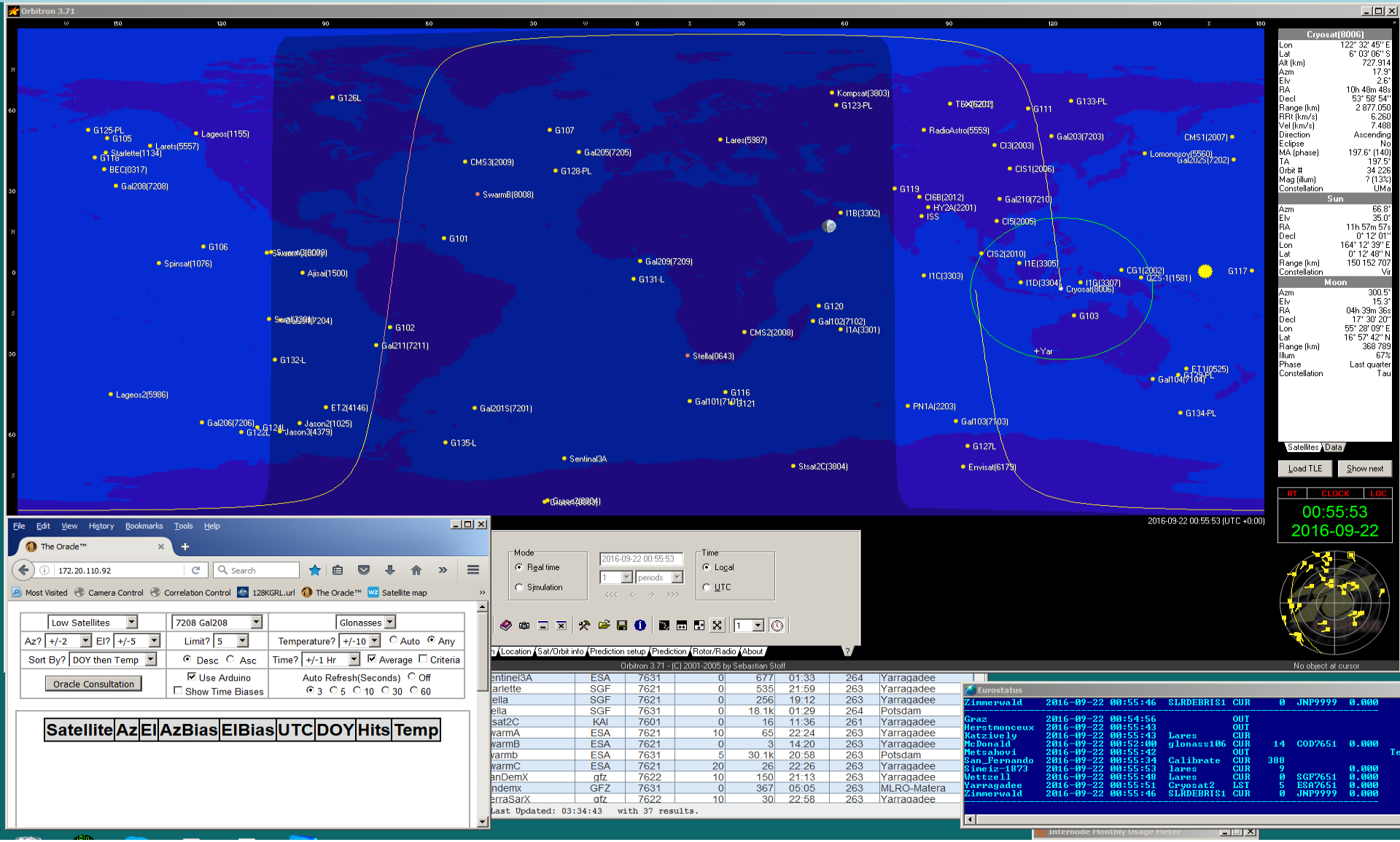
# GNSS/RNSS Satellites to track in 2016



# Scheduling Tools at Yarragadee


SLR Operations Screen 1

# Scheduling Tools at Yarragadee




## SLR Operations Screen 2

# Scheduling Questions

- Is the GNSS coverage adequate for purpose? Would it be better to have a prime subset of Galileo targets the same as Glonass?
- Is it better to concentrate on one or two RNSS targets per day at each station and get better pass coverage or get a few NPs for each visible satellite per day?
- Is the single segment GNSS pass at all useful?
- Are there some LEOs that don't require every station to track every day? Of course every one wants the NP gold medal!
- How do we give credit for best coverage for each satellite?
- Should we occasionally track the "quiet" (<G122) glonass?
- Of course a second (LEO/MEO capable), SLR system at YGO would relieve some scheduling pressure!
- Khz and fast interleaving – would it provide useful data or just more operator stress?

# Moving Forward

- Encourage operators to obtain as good a pass coverage as possible.
- Encourage feedback from data users – Are we getting enough coverage to be useful? Conversely is there such a thing as too much data – are some of our efforts wasted? We want to know – information can be used to instruct / encourage operators.
- More discussions to follow in the clinic sessions.